

SEQUENCE LISTING

<110> ORIGENE TECHNOLOGIES INC

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<150> US 10/054,935

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<160> 102

<170> PatentIn version 3.1

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Lys Thr Gly Asn Cys Leu Tyr Gly Asn Thr Cys Arg Phe Val His Gly			
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Ile Lys Ile Thr Lys Glu Arg Thr Pro Glu Ser Glu Glu Glu Asn Val			
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Arg Glu Lys Glu Arg Asp Arg Glu Arg Asp Arg Asp Arg Asp His Asp	720	725	730	
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Asp Ser Asp Ala Tyr Asn Ser Gly Asp Asp Lys Asn Glu Lys His Arg	850	855	860	
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Ser His Leu Thr Glu Asp Arg Gln Gly Arg Trp Lys Glu Glu Asp Arg	880	885	890	
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Lys Pro Glu Arg Lys Glu Ser Ser Arg Arg Tyr Glu Glu Gln Glu Leu	895	900	905	910
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Lys Glu Lys Val Ser Ser Val Asp Lys Gln Arg Glu Gln Thr Glu Ile				

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Pro Arg Gly Lys Gly Tyr Ser Ser Asn Tyr Arg Arg Ser Pro Glu Arg
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Pro Thr Gly Asp Leu Arg Glu Arg Met Lys Asn Lys Arg Gln Asp Val
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Arg Lys Glu Ser Ser Arg Gly Arg His Arg Glu Lys Glu Asp Ile Lys
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Ile Thr Lys Glu Arg Thr Pro Glu Ser Glu Glu Glu Asn Val Glu Trp
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Glu Thr Asn Arg Asp Asp Ser Asp Asn Gly Asp Ile Asn Tyr Asp Tyr
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Val His Glu Leu Ser Leu Glu Met Lys Arg Gln Lys Ile Gln Arg Glu
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Leu Met Lys Leu Glu Gln Glu Asn Met Glu Lys Arg Glu Glu Ile Ile
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Ile Lys Lys Glu Val Ser Pro Glu Val Val Arg Ser Lys Leu Ser Pro
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Pro Lys Ser Ser Ser Ala Ser Lys Lys Asp Arg Lys Thr Ser Ala Val
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Asp Ile Ala Leu Gly Lys Lys Tyr Lys Glu Lys Tyr Lys Val Lys Asp
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Arg Ile Glu Glu Lys Thr Arg Asp Gly Lys Asp Arg Gly Arg Asp Phe
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Glu Arg Gln Arg Glu Lys Arg Asp Lys Pro Arg Ser Thr Ser Pro Ala
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Gly Gln His His Ser Pro Ile Ser Ser Arg His His Ser Ser Ser Ser
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Gln Ser Gly Ser Ser Ile Gln Arg His Ser Pro Ser Pro Arg Arg Lys
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Glu Met Arg Asp Tyr Ser Arg Asp Thr Lys Glu Ser Arg Asp Pro Arg
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Pro Ser Ser Pro Ile Arg His Gln Gly Arg Asn Asp Glu Leu Glu Arg

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Arg Glu Leu Glu Arg Glu Arg Ala Arg Glu Arg Glu Arg Glu Arg Glu
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His Asp Glu Arg Lys Ser Lys Lys Arg Tyr Arg Asn Glu Gly Ser Pro
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Ser Pro Arg Gln Ser Pro Lys Arg Arg Arg Glu His Ser Pro Asp Ser
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Asp Arg Glu Thr Ser Asp Arg Ala His Asp Glu Asn Lys Lys Lys Ala
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Asp Glu Ser Lys Leu Asp Asp Ala His Ser Leu Gly Ser Gly Ala
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Leu Met Pro Lys His Pro Lys Glu Pro Arg Glu Pro Gly Ala Ala
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Leu Leu Lys Phe Thr Pro Gly Ala Val Met Leu Arg Val Gly Ile

1520

1525

1530

Ser Lys Lys Leu Ala Gly Ser Glu Leu Phe Ala Lys Val Lys Glu
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Leu

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 Met Ser Lys Ile Arg Arg Lys Val Thr Val Glu Asn Thr Lys
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 Thr Ile Ser Asp Ser Thr Ser Arg Arg Pro Ser Val Phe Glu Arg Leu
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 Gly Pro Ser Thr Gly Ser Thr Ala Glu Thr Gln Cys Arg Asn Trp Leu
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 aag act ggc aac tgc ctc tat gga aac aca tgt aga ttc gta cat ggc 255
 Lys Thr Gly Asn Cys Leu Tyr Gly Asn Thr Cys Arg Phe Val His Gly
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 Pro Ser Pro Arg Gly Lys Gly Tyr Ser Ser Asn Tyr Arg Arg Ser Pro
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 Glu Arg Pro Thr Gly Asp Leu Arg Glu Arg Met Lys Asn Lys Arg Gln
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 gac gtg gac act gag ccc cag aaa cga aat aca gag gag tca tcc tca 399
 Asp Val Asp Thr Glu Pro Gln Lys Arg Asn Thr Glu Glu Ser Ser Ser
 95 100 105 110
 cct gtt agg aaa gaa tct tca aga ggg aga cat agg gaa aag gaa gac 447

Pro	Val	Arg	Lys	Glu	Ser	Ser	Arg	Gly	Arg	His	Arg	Glu	Lys	Glu	Asp		
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Ile	Lys	Ile	Thr	Lys	Glu	Arg	Thr	Pro	Glu	Ser	Glu	Glu	Glu	Asn	Val		
			130					135					140				
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Glu	Trp	Glu	Thr	Asn	Arg	Asp	Asp	Ser	Asp	Asn	Gly	Asp	Ile	Asn	Tyr		
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gat	tat	gtt	cat	gaa	ttg	tca	ttg	gaa	atg	aag	cgt	cag	aag	ata	cag	591	
Asp	Tyr	Val	His	Glu	Leu	Ser	Leu	Glu	Met	Lys	Arg	Gln	Lys	Ile	Gln		
	160					165					170						
agg	gaa	tta	atg	aag	ctg	gaa	caa	gaa	aac	atg	gag	aag	aga	gaa	gaa	639	
Arg	Glu	Leu	Met	Lys	Leu	Glu	Gln	Glu	Asn	Met	Glu	Lys	Arg	Glu	Glu		
	175				180					185					190		
att	atc	att	aaa	aag	gag	gtt	tca	cca	gaa	gtg	gtt	aga	tca	aaa	ttg	687	
Ile	Ile	Ile	Lys	Lys	Glu	Val	Ser	Pro	Glu	Val	Val	Arg	Ser	Lys	Leu		
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tcc	ccg	tca	cct	tct	cta	aga	aag	tct	agc	aaa	tct	ccg	aag	cga	aaa	735	
Ser	Pro	Ser	Pro	Ser	Leu	Arg	Lys	Ser	Ser	Lys	Ser	Pro	Lys	Arg	Lys		
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Ser	Ser	Pro	Lys	Ser	Ser	Ser	Ala	Ser	Lys	Lys	Asp	Arg	Lys	Thr	Ser		
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gca	gta	tct	tct	ccc	ctg	ttg	gac	cag	cag	aga	aat	tca	aaa	acc	aac	831	
Ala	Val	Ser	Ser	Pro	Leu	Leu	Asp	Gln	Gln	Arg	Asn	Ser	Lys	Thr	Asn		
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caa	agt	aaa	aag	aaa	gga	cca	cgt	act	cct	agt	cca	ccc	cct	cct	ata	879	
Gln	Ser	Lys	Lys	Lys	Gly	Pro	Arg	Thr	Pro	Ser	Pro	Pro	Pro	Pro	Ile		
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cca	gaa	gat	atc	gct	ctg	ggg	aaa	aaa	tac	aaa	gaa	aaa	tat	aaa	gta	927	
Pro	Glu	Asp	Ile	Ala	Leu	Gly	Lys	Lys	Tyr	Lys	Glu	Lys	Tyr	Lys	Val		
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aaa	gac	agg	ata	gaa	gaa	aaa	aca	aga	gat	gga	aag	gac	aga	gga	cga	975	
Lys	Asp	Arg	Ile	Glu	Glu	Lys	Thr	Arg	Asp	Gly	Lys	Asp	Arg	Gly	Arg		
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Asp	Phe	Glu	Arg	Gln	Arg	Glu	Lys	Arg	Asp	Lys	Pro	Arg	Ser	Thr	Ser		
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cca	gca	gga	cag	cat	cat	tct	cct	ata	tct	tct	aga	cat	cac	tca	tct	1071	
Pro	Ala	Gly	Gln	His	His	Ser	Pro	Ile	Ser	Ser	Arg	His	His	Ser	Ser		
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tcc	tca	caa	tca	gga	tca	tct	att	caa	aga	cat	tct	cct	tct	cct	cgt	1119	
Ser	Ser	Gln	Ser	Gly	Ser	Ser	Ile	Gln	Arg	His	Ser	Pro	Ser	Pro	Arg		

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cga aaa aga act cct tca cca tct tat cag cgg aca cta act cca cct				1167
Arg Lys Arg Thr Pro Ser Pro Ser Tyr Gln Arg Thr Leu Thr Pro Pro				
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tta cga cgc tct gcc tct cct tat cct tca cat tct ttg tcg tct ccc				1215
Leu Arg Arg Ser Ala Ser Pro Tyr Pro Ser His Ser Leu Ser Ser Pro				
370		375	380	
cag aga aag cag agt cct cca aga cat cgc tct cca atg cga gag aaa				1263
Gln Arg Lys Gln Ser Pro Pro Arg His Arg Ser Pro Met Arg Glu Lys				
385		390	395	
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Gly Arg His Asp His Glu Arg Thr Ser Gln Ser His Asp Arg Arg His				
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Glu Arg Arg Glu Asp Thr Arg Gly Lys Arg Asp Arg Glu Lys Asp Ser				
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Arg Glu Glu Arg Glu Tyr Glu Gln Asp Gln Ser Ser Ser Arg Asp His				
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Arg Asp Asp Arg Glu Pro Arg Asp Gly Arg Asp Arg Arg Asp Ala Arg				
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Asp Thr Arg Asp Arg Arg Glu Leu Arg Asp Ser Arg Asp Met Arg Asp				
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tca agg gag atg aga gat tat agc aga gat acc aaa gag agc cgt gat				1551
Ser Arg Glu Met Arg Asp Tyr Ser Arg Asp Thr Lys Glu Ser Arg Asp				
480		485	490	
ccc aga gat tct cgg tcc act cgt gat gcc cat gac tac agg gac cgt				1599
Pro Arg Asp Ser Arg Ser Thr Arg Asp Ala His Asp Tyr Arg Asp Arg				
495		500	505	510
gaa ggt cga gat act cat cga aag gag gat aca tat cca gaa gaa tcc				1647
Glu Gly Arg Asp Thr His Arg Lys Glu Asp Thr Tyr Pro Glu Glu Ser				
515		520	525	
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Arg Ser Tyr Gly Arg Asn His Leu Arg Glu Glu Ser Ser Arg Thr Glu				
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Ile Arg Asn Glu Ser Arg Asn Glu Ser Arg Ser Glu Ile Arg Asn Asp				
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cga atg ggc cga agt agg ggg agg gtt cct gag tta cct gaa aag gga				1791
Arg Met Gly Arg Ser Arg Gly Arg Val Pro Glu Leu Pro Glu Lys Gly				
560		565	570	

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Leu	Ser	Ser	Leu	Leu	Pro	Pro	Pro	Pro	Pro	Val	Ala	Thr	Ala	Thr	
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Ala	Thr	Thr	Val	Pro	Ala	Thr	Leu	Ala	Ala	Thr	Thr	Ala	Ala	Ala	
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His	Val	Thr	Ile	Glu	Asp	Ala	Gln	His	Arg	Lys	Pro	Met	Asp	Gln	
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Thr	Ser	Gly	Arg	Leu	Arg	Ser	Pro	Ser	Asn	Asp	Ser	Ala	His	Arg	
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Ser	Gly	Asp	Asp	Gln	Ser	Gly	Arg	Lys	Arg	Val	Leu	His	Ser	Gly	
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Ser Thr Ser Ser Asp Arg Gln Asp Ser Arg Ser His Ser Ser Arg			
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Ser Phe Asp Ser Arg Asp Arg Leu Gln Glu Arg Asp Arg Tyr Glu			
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His Asp Arg Glu Arg Glu Arg Glu Arg Arg Asp Thr Arg Gln Arg			
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Glu Trp Asp Arg Asp Ala Asp Lys Asp Trp Pro Arg Asn Arg Asp			
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Arg Asp Arg Leu Arg Glu Arg Glu Arg Glu Arg Glu Arg Asp Lys			
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Arg Arg Asp Leu Asp Arg Glu Arg Glu Arg Leu Ile Ser Asp Ser			
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Ser Gln Ile Glu Ser Val Lys Arg Cys Glu Ala Lys Leu Glu Gly			
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Leu Met Lys Leu Glu Gln Glu Asn Met Glu Lys Arg Glu Glu Ile Ile
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Ser Pro Ser Leu Arg Lys Ser Ser Lys Ser Pro Lys Arg Lys Ser Ser
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Lys Lys Lys Gly Pro Arg Thr Pro Ser Pro Pro Pro Pro Ile Pro Glu
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Gly Gln His His Ser Pro Ile Ser Ser Arg His His Ser Ser Ser Ser
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Arg Glu Leu Glu Arg Glu Arg Ala Arg Glu Arg Glu Arg Glu Arg Glu
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Arg Glu Lys Arg Glu Glu Ile Arg Glu Asp Arg Asn Pro Arg Asp Gly
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His Asp Glu Arg Lys Ser Lys Lys Arg Tyr Arg Asn Glu Gly Ser Pro
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Ser Pro Arg Gln Ser Pro Lys Arg Arg Arg Glu His Ser Pro Asp Ser
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Asp Ala Tyr Asn Ser Gly Asp Asp Lys Asn Glu Lys His Arg Leu Leu
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985

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Lys Ala Thr Lys Lys Ser Lys Val Gly Phe Leu Asp Pro Leu Ala Thr				
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Ser Pro Asn Tyr	Pro Asp Leu Gly Gln Ser	Glu Phe Ile Arg Thr Asn	
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Ala Lys Arg Ser Pro Ser Thr Ser Trp Phe Gln Lys Thr Cys Ser Thr
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Pro Ser Asn Pro Lys Tyr Glu Met Val Ile Pro Asp His Pro Ala Lys
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Ser His Pro Asp Leu His Val Ser Asn Asp Cys Ser Ser Ser Val Ala
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Glu Ser Ser Ser Pro Leu Arg Asn Phe Ser Cys Gly Phe Glu Arg Thr
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Val Phe Arg Thr Asp Arg Asn Cys Gln Ala Ile Gln Gln Asn His Ser
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Cys Ser Lys Ser Ser Glu Asp Leu Lys Pro Cys Asp Thr Ser Ser Thr
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His Thr Gly Ser Ile Ser Gln Ser Asn Asp Val Ser Gly Ile Trp Lys
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Gln Met Glu Gln Gln Phe Gln Gln Lys Thr Ala Val Trp Gly Gly Gln
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Glu Val Lys Gln Gly Ile Asp Pro Lys Lys Ile Thr Glu Glu Ser Met
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Ser Val Asn Ala Ser His Gly Lys Gly Phe Ser Arg Pro Ala Arg Pro
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Ala Asn Arg Arg Leu Pro Ser Arg Trp Ala Ser Arg Ser Pro Ser Ala
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Phe Pro Cys Leu Gly Lys Gly Met Glu Arg Pro Ala Ala Arg Glu Pro
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Leu Gly Val Ala Thr Ala Gly Gly Ala Val Thr Ile Thr Ser Asp Leu
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Arg Arg Phe Gln Gly Leu Leu Leu Asp Arg Arg Gly Arg Leu His Arg
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Gly Thr Ser Leu Leu Val Ser Ala Val Gly Leu Gly Val Ala Thr Ala
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Gly Gly Ala Val Thr Ile Thr Ser Asp Leu Ser Leu Ile Phe Cys Asn
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Ser Arg Glu Leu Arg Arg Val Gln Glu Ile Ala Ala Thr Cys Gln Asp
145 150 155 160

Gln Met Arg Glu Ile Leu Ser Cys Leu Glu Phe Phe Cys Arg Trp Gln
165 170 175

Gly Cys Gly Asp Arg Gln Leu Leu Gln Cys Gly Arg Asn Ala Ser Ile
180 185 190

Ala Leu Tyr Asn Ser Val Tyr Phe Ile Val Phe Phe Gly Ser Arg Gly
195 200 205

Phe Leu Ile Pro Arg Arg Ala Glu Gly Asp Thr Lys Val Ser Gln Ala
210 215 220

Val Leu Lys Ala Lys Ile Gln Lys Leu Ala Glu Ser Leu Glu Ser Cys
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Thr Gly Ala Leu Asp Glu Leu Ser Glu Gln Leu Glu Ser Arg Val Gln
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gcc cca caa agc cct gca gga tac atg cca tat tcc cat cct tca agt Ala Pro Gln Ser Pro Ala Gly Tyr Met Pro Tyr Ser His Pro Ser Ser 180 185 190	1054			
tac aca aca cat cca cag atg caa caa gca tcg gta tca agt ccc att Tyr Thr Thr His Pro Gln Met Gln Gln Ala Ser Val Ser Ser Pro Ile 195 200 205 210	1102			
gtt gca ggt ggt ttg aga aac ata cat gat aat aaa gtt tct ggt ccg Val Ala Gly Gly Leu Arg Asn Ile His Asp Asn Lys Val Ser Gly Pro 215 220 225	1150			
ttg tct ggc aat tca gct aat cat cat gct gat aat cct aga cat ggt Leu Ser Gly Asn Ser Ala Asn His His Ala Asp Asn Pro Arg His Gly 230 235 240	1198			
tca agt gag gac tac cta cac atg gtg cac agg cta agt agt gac gat Ser Ser Glu Asp Tyr Leu His Met Val His Arg Leu Ser Ser Asp Asp 245 250 255	1246			
gga gat tct tca aca atg agg aat gct gca tct ttt ccc ttg aga tct Gly Asp Ser Ser Thr Met Arg Asn Ala Ala Ser Phe Pro Leu Arg Ser 260 265 270	1294			

cca cag cca gta tgc tcc cct gct gga agt gaa gga act cct aaa ggc Pro Gln Pro Val Cys Ser Pro Ala Gly Ser Glu Gly Thr Pro Lys Gly 275 280 285 290	1342
tca aga cca cct tta atc cta caa tct cag tct cta cct tgt tca tca Ser Arg Pro Pro Leu Ile Leu Gln Ser Gln Ser Leu Pro Cys Ser Ser 295 300 305	1390
cct cga gat gtt cca cca gat atc ttg cta gat tct cca gaa aga aaa Pro Arg Asp Val Pro Pro Asp Ile Leu Leu Asp Ser Pro Glu Arg Lys 310 315 320	1438
caa aag aag cag aag aaa atg aaa tta ggc aag gat gaa aaa gag cag Gln Lys Lys Gln Lys Lys Met Lys Leu Gly Lys Asp Glu Lys Glu Gln 325 330 335	1486
agt gag aaa gcg gca atg tat gat ata att agt tct cca tcc aag gac Ser Glu Lys Ala Ala Met Tyr Asp Ile Ile Ser Ser Pro Ser Lys Asp 340 345 350	1534
tct act aaa ctt aca tta aga ctt tct cgt gta agg tct tca gac atg Ser Thr Lys Leu Thr Leu Arg Leu Ser Arg Val Arg Ser Ser Asp Met 355 360 365 370	1582
gac cag caa gag gat atg att tct ggt gtg gaa aat agc aat gtt tca Asp Gln Gln Glu Asp Met Ile Ser Gly Val Glu Asn Ser Asn Val Ser 375 380 385	1630
gaa aat gat att cct ttt aat gtg cag tac cca gga cag act tca aaa Glu Asn Asp Ile Pro Phe Asn Val Gln Tyr Pro Gly Gln Thr Ser Lys 390 395 400	1678
aca ccc att act cca caa gat ata aac cgc cca cta aat gct gct caa Thr Pro Ile Thr Pro Gln Asp Ile Asn Arg Pro Leu Asn Ala Ala Gln 405 410 415	1726
tgt ttg tcg cag caa gaa caa aca gca ttc ctt cca gca aat caa gtg Cys Leu Ser Gln Gln Glu Gln Thr Ala Phe Leu Pro Ala Asn Gln Val 420 425 430	1774
cct gtt tta caa cag aac act tca gtt gct gca aaa caa ccc cag act Pro Val Leu Gln Gln Asn Thr Ser Val Ala Ala Lys Gln Pro Gln Thr 435 440 445 450	1822
tct gtg gta cag aat caa caa cag ata tca caa cag gga cct ata tat Ser Val Val Gln Asn Gln Gln Gln Ile Ser Gln Gln Gly Pro Ile Tyr 455 460 465	1870
gat gaa gtg gaa ttg gat gca ttg gct gaa att gag cga ata gag aga Asp Glu Val Glu Leu Asp Ala Leu Ala Glu Ile Glu Arg Ile Glu Arg 470 475 480	1918
gaa tca gct att gaa agg gag cgc ttc tca aaa gaa gtt caa gat aaa Glu Ser Ala Ile Glu Arg Glu Arg Phe Ser Lys Glu Val Gln Asp Lys 485 490 495	1966

gat aag cct ttg aaa aaa aga aaa caa gat tct tac cca cag gag gct Asp Lys Pro Leu Lys Lys Arg Lys Gln Asp Ser Tyr Pro Gln Glu Ala 500 505 510	2014
ggg ggt gct aca gga ggt aat aga cca gct tct cag gag acg ggt tct Gly Gly Ala Thr Gly Gly Asn Arg Pro Ala Ser Gln Glu Thr Gly Ser 515 520 525 530	2062
acg gga aat ggg tca agg cca gca tta atg gtt agc att gat ctt cat Thr Gly Asn Gly Ser Arg Pro Ala Leu Met Val Ser Ile Asp Leu His 535 540 545	2110
cag gca gga aga gtg gac tct cag gct tct ata act cag gat tca gac Gln Ala Gly Arg Val Asp Ser Gln Ala Ser Ile Thr Gln Asp Ser Asp 550 555 560	2158
tcc ata aaa aag cct gaa gaa atc aaa caa tgt aat gat gca cct gtt Ser Ile Lys Lys Pro Glu Glu Ile Lys Gln Cys Asn Asp Ala Pro Val 565 570 575	2206
tct gtt ctt cag gaa gat att gtt gga agt ctt aaa tct aca cca gaa Ser Val Leu Gln Glu Asp Ile Val Gly Ser Leu Lys Ser Thr Pro Glu 580 585 590	2254
aac cat cct gag aca cct aaa aaa aag tct gat cct gag ctt tca aag Asn His Pro Glu Thr Pro Lys Lys Lys Ser Asp Pro Glu Leu Ser Lys 595 600 605 610	2302
agt gaa atg aaa caa agt gaa agt aga tta gca gaa tct aaa cca aat Ser Glu Met Lys Gln Ser Glu Ser Arg Leu Ala Glu Ser Lys Pro Asn 615 620 625	2350
gaa aac cga ttg gtg gag aca aaa tca agt gaa aat aag tta gaa act Glu Asn Arg Leu Val Glu Thr Lys Ser Ser Glu Asn Lys Leu Glu Thr 630 635 640	2398
aaa gtt gag acc caa aca gaa gaa ctt aaa cag aat gag agc aga aca Lys Val Glu Thr Gln Thr Glu Glu Leu Lys Gln Asn Glu Ser Arg Thr 645 650 655	2446
act gaa tgc aaa caa aac gag agc acc ata gtt gag cct aaa caa aat Thr Glu Cys Lys Gln Asn Glu Ser Thr Ile Val Glu Pro Lys Gln Asn 660 665 670	2494
gaa aat aga ctg tct gac aca aaa cca aat gac aac aaa caa aat aat Glu Asn Arg Leu Ser Asp Thr Lys Pro Asn Asp Asn Lys Gln Asn Asn 675 680 685 690	2542
ggc aga tca gaa aca aca aaa tca agg cct gaa acc cca aag caa aag Gly Arg Ser Glu Thr Lys Ser Arg Pro Glu Thr Pro Lys Gln Lys 695 700 705	2590
ggt gaa agc cgg cct gag act cca aaa caa aag agt gat ggg cat cct Gly Glu Ser Arg Pro Glu Thr Pro Lys Gln Lys Ser Asp Gly His Pro 710 715 720	2638
gaa acc cca aaa cag aag ggt gat gga agg cct gaa act cca aag caa	2686

Glu Thr Pro Lys Gln Lys Gly Asp Gly Arg Pro Glu Thr Pro Lys Gln	
725 730 735	
aaa ggt gag agc cgc cct gaa act cca aag caa aaa aat gaa ggg cga	2734
Lys Gly Glu Ser Arg Pro Glu Thr Pro Lys Gln Lys Asn Glu Gly Arg	
740 745 750	
cct gaa aca cca aaa cac agg cat gac aat agg agg gat tct gga aag	2782
Pro Glu Thr Pro Lys His Arg His Asp Asn Arg Arg Asp Ser Gly Lys	
755 760 765 770	
cca tct aca gag aaa aaa cct gaa gtg tct aaa cat aaa caa gat act	2830
Pro Ser Thr Glu Lys Lys Pro Glu Val Ser Lys His Lys Gln Asp Thr	
775 780 785	
aaa tct gac tca cct cgg tta aaa tca gaa cga gct gaa gcc tta aag	2878
Lys Ser Asp Ser Pro Arg Leu Lys Ser Glu Arg Ala Glu Ala Leu Lys	
790 795 800	
cag aga cct gat ggg cga tct gtt tct gag tca cta aga cgt gac cat	2926
Gln Arg Pro Asp Gly Arg Ser Val Ser Glu Ser Leu Arg Arg Asp His	
805 810 815	
gat aat aaa caa aaa tca gat gac agg ggt gaa tca gag cga cat cga	2974
Asp Asn Lys Gln Lys Ser Asp Asp Arg Gly Glu Ser Glu Arg His Arg	
820 825 830	
ggg gat cag tct agg gtt cga aga cca gaa aca ttg aga tcc tct agt	3022
Gly Asp Gln Ser Arg Val Arg Arg Pro Glu Thr Leu Arg Ser Ser Ser	
835 840 845 850	
aga aat gaa cat ggc att aaa tct gat agt tca aaa act gat aaa cta	3070
Arg Asn Glu His Gly Ile Lys Ser Asp Ser Ser Lys Thr Asp Lys Leu	
855 860 865	
gaa cga aaa cac agg cat gaa tca ggg gac tca agg gaa aga cca tct	3118
Glu Arg Lys His Arg His Glu Ser Gly Asp Ser Arg Glu Arg Pro Ser	
870 875 880	
tct ggg gaa caa aaa tca aga cct gac agt cct cgt gtt aaa caa gga	3166
Ser Gly Glu Gln Lys Ser Arg Pro Asp Ser Pro Arg Val Lys Gln Gly	
885 890 895	
gat tct aat aaa tca aga tct gat aaa ctt ggt ttt aaa tca cca act	3214
Asp Ser Asn Lys Ser Arg Ser Asp Lys Leu Gly Phe Lys Ser Pro Thr	
900 905 910	
agt aaa gat gac aaa agg aca gag ggt aac aag agt aaa gta gac act	3262
Ser Lys Asp Asp Lys Arg Thr Glu Gly Asn Lys Ser Lys Val Asp Thr	
915 920 925 930	
aat aaa gca cac cct gac aat aag gca gaa ttt cca agt tat ttg ttg	3310
Asn Lys Ala His Pro Asp Asn Lys Ala Glu Phe Pro Ser Tyr Leu Leu	
935 940 945	
ggg ggc agg tct ggt gcg ttg aaa aat ttt gtc att ccg aaa atc aag	3358
Gly Gly Arg Ser Gly Ala Leu Lys Asn Phe Val Ile Pro Lys Ile Lys	

950	955	960	
agg gat aaa gat ggc aat gtt act cag gag aca aag aaa atg gaa atg Arg Asp Lys Asp Gly Asn Val Thr Gln Glu Thr Lys Lys Met Glu Met 965 970 975			3406
aaa gga gag ccg aaa gac aaa gta gaa aaa ata gga tta gtt gaa gat Lys Gly Glu Pro Lys Asp Lys Val Glu Lys Ile Gly Leu Val Glu Asp 980 985 990			3454
cta aat aaa gga gct aag cct gta gtt gtg cta caa aaa ctg tct Leu Asn Lys Gly Ala Lys Pro Val Val Val Leu Gln Lys Leu Ser 995 1000 1005			3499
ttg gat gat gtt cag aaa ctt att aaa gat aga gag gac aaa tca Leu Asp Asp Val Gln Lys Leu Ile Lys Asp Arg Glu Asp Lys Ser 1010 1015 1020			3544
aga agt tcc ctt aaa cct atc aag aat aaa cca tca aag tca aat Arg Ser Ser Leu Lys Pro Ile Lys Asn Lys Pro Ser Lys Ser Asn 1025 1030 1035			3589
aaa ggt agt ata gat caa tca gtg tta aaa gaa tta ccc cct gaa Lys Gly Ser Ile Asp Gln Ser Val Leu Lys Glu Leu Pro Pro Glu 1040 1045 1050			3634
ctc ctg gca gaa att gag tcc acc atg cca ctt tgt gaa cgt gtg Leu Leu Ala Glu Ile Glu Ser Thr Met Pro Leu Cys Glu Arg Val 1055 1060 1065			3679
aaa atg aac aaa cgc aag cgt agc aca gtt aat gaa aag cca aaa Lys Met Asn Lys Arg Lys Arg Ser Thr Val Asn Glu Lys Pro Lys 1070 1075 1080			3724
tat gct gaa atc agt tca gat gaa gat aat gat agt gat gaa gct Tyr Ala Glu Ile Ser Ser Asp Glu Asp Asn Asp Ser Asp Glu Ala 1085 1090 1095			3769
ttt gaa tcc tct agg aaa cga cat aaa aaa gat gat gat aaa gct Phe Glu Ser Ser Arg Lys Arg His Lys Lys Asp Asp Asp Lys Ala 1100 1105 1110			3814
tgg gaa tat gaa gag cgt gac aga aga agc tct ggg gat cat agg Trp Glu Tyr Glu Glu Arg Asp Arg Arg Ser Ser Gly Asp His Arg 1115 1120 1125			3859
aga agt ggc cac tct cat gaa gga aga agg agt tca ggt ggt ggt Arg Ser Gly His Ser His Glu Gly Arg Arg Ser Ser Gly Gly Gly 1130 1135 1140			3904
cgt tat cga aac cga agt ccg tca gat tct gac atg gaa gat tat Arg Tyr Arg Asn Arg Ser Pro Ser Asp Ser Asp Met Glu Asp Tyr 1145 1150 1155			3949
tct cct cct ccc agc ctt agt gag gtt gct agg aaa atg aag aaa Ser Pro Pro Pro Ser Leu Ser Glu Val Ala Arg Lys Met Lys Lys 1160 1165 1170			3994

aaa gaa aaa cag aag aaa agg aaa gca tat gaa cca aaa cta aca Lys Glu Lys Gln Lys Lys Arg Lys Ala Tyr Glu Pro Lys Leu Thr 1175 1180 1185	4039
cct gaa gaa atg atg gac tct tca act ttt aag aga ttc aca gcc Pro Glu Glu Met Met Asp Ser Ser Thr Phe Lys Arg Phe Thr Ala 1190 1195 1200	4084
tca ata gag aat att ttg gat aat ttg gaa gat atg gat ttt act Ser Ile Glu Asn Ile Leu Asp Asn Leu Glu Asp Met Asp Phe Thr 1205 1210 1215	4129
gcg ttt ggt gat gat gat gaa att cct cag gaa ctg ctc tta gga Ala Phe Gly Asp Asp Asp Glu Ile Pro Gln Glu Leu Leu Leu Gly 1220 1225 1230	4174
aaa cat cag ctt aat gaa ctt ggc agt gaa tct gct aaa ata aaa Lys His Gln Leu Asn Glu Leu Gly Ser Glu Ser Ala Lys Ile Lys 1235 1240 1245	4219
gca atg ggt ata atg gat aag ctt tca act gac aaa act gtg aaa Ala Met Gly Ile Met Asp Lys Leu Ser Thr Asp Lys Thr Val Lys 1250 1255 1260	4264
gtc tta aat atc ttg gag aag aat att cag gat ggg tca aag ctt Val Leu Asn Ile Leu Glu Lys Asn Ile Gln Asp Gly Ser Lys Leu 1265 1270 1275	4309
tcc act ttg tta aat cat aat aac gat act gaa gaa gaa gaa agg Ser Thr Leu Leu Asn His Asn Asn Asp Thr Glu Glu Glu Glu Arg 1280 1285 1290	4354
tta tgg aga gac ctt att atg gag aga gtt aca aaa tca gcg gat Leu Trp Arg Asp Leu Ile Met Glu Arg Val Thr Lys Ser Ala Asp 1295 1300 1305	4399
gct tgt ctt aca act atc aac att atg aca tcc cct aac atg cca Ala Cys Leu Thr Thr Ile Asn Ile Met Thr Ser Pro Asn Met Pro 1310 1315 1320	4444
aaa gct gtg tac att gag gat gta att gaa aga gtt ata cag tac Lys Ala Val Tyr Ile Glu Asp Val Ile Glu Arg Val Ile Gln Tyr 1325 1330 1335	4489
act aaa ttt cat ttg cag aat aca ctt tat cct cag tat gat cct Thr Lys Phe His Leu Gln Asn Thr Leu Tyr Pro Gln Tyr Asp Pro 1340 1345 1350	4534
gtt tac aga tta gat cct cat gga gga ggc tta tta agt tca aaa Val Tyr Arg Leu Asp Pro His Gly Gly Gly Leu Leu Ser Ser Lys 1355 1360 1365	4579
gca aaa cgg gct aaa tgt tct acc cat aag cag aga gta ata gta Ala Lys Arg Ala Lys Cys Ser Thr His Lys Gln Arg Val Ile Val 1370 1375 1380	4624

atg	ctt	tat	aac	aaa	gtt	tgt	gac	att	gtt	agc	agc	tta	tca	gaa	4669
Met	Leu	Tyr	Asn	Lys	Val	Cys	Asp	Ile	Val	Ser	Ser	Leu	Ser	Glu	
1385					1390					1395					
ttg	cta	gag	ata	caa	ctt	ctt	aca	gac	aca	aca	att	ctt	cag	gtt	4714
Leu	Leu	Glu	Ile	Gln	Leu	Leu	Thr	Asp	Thr	Thr	Ile	Leu	Gln	Val	
1400					1405					1410					
tca	tct	atg	gga	ata	aca	cca	ttt	ttt	gtg	gaa	aat	gtc	agt	gaa	4759
Ser	Ser	Met	Gly	Ile	Thr	Pro	Phe	Phe	Val	Glu	Asn	Val	Ser	Glu	
1415					1420					1425					
cta	cag	ttg	tgt	gcc	att	aag	tta	gtc	act	gca	gta	ttc	tca	aga	4804
Leu	Gln	Leu	Cys	Ala	Ile	Lys	Leu	Val	Thr	Ala	Val	Phe	Ser	Arg	
1430					1435					1440					
tat	gaa	aaa	cat	agg	cag	tta	att	ttg	gaa	gaa	att	ttt	act	tca	4849
Tyr	Glu	Lys	His	Arg	Gln	Leu	Ile	Leu	Glu	Glu	Ile	Phe	Thr	Ser	
1445					1450					1455					
ctt	gca	aga	tta	cca	acc	agc	aag	agg	agt	tta	agg	aac	ttc	agg	4894
Leu	Ala	Arg	Leu	Pro	Thr	Ser	Lys	Arg	Ser	Leu	Arg	Asn	Phe	Arg	
1460					1465					1470					
tta	aac	agt	agt	gat	atg	gat	gga	gaa	cct	atg	tat	att	cag	atg	4939
Leu	Asn	Ser	Ser	Asp	Met	Asp	Gly	Glu	Pro	Met	Tyr	Ile	Gln	Met	
1475					1480					1485					
gtt	aca	gca	ctg	gtt	tta	caa	ctt	att	cag	tgt	gtg	gta	cac	tta	4984
Val	Thr	Ala	Leu	Val	Leu	Gln	Leu	Ile	Gln	Cys	Val	Val	His	Leu	
1490					1495					1500					
cca	tca	tca	gag	aag	gac	tct	aat	gca	gaa	gaa	gat	tca	aat	aaa	5029
Pro	Ser	Ser	Glu	Lys	Asp	Ser	Asn	Ala	Glu	Glu	Asp	Ser	Asn	Lys	
1505					1510					1515					
aaa	att	gac	cag	gat	gtt	gtc	att	act	aac	tct	tat	gaa	aca	gct	5074
Lys	Ile	Asp	Gln	Asp	Val	Val	Ile	Thr	Asn	Ser	Tyr	Glu	Thr	Ala	
1520					1525					1530					
atg	cga	aca	gcc	caa	aac	ttc	ctc	tcc	atc	ttc	ctt	aaa	aaa	tgt	5119
Met	Arg	Thr	Ala	Gln	Asn	Phe	Leu	Ser	Ile	Phe	Leu	Lys	Lys	Cys	
1535					1540					1545					
ggt	agt	aag	caa	ggt	gaa	gaa	gat	tac	aga	cca	ctg	ttt	gaa	aat	5164
Gly	Ser	Lys	Gln	Gly	Glu	Glu	Asp	Tyr	Arg	Pro	Leu	Phe	Glu	Asn	
1550					1555					1560					
ttt	gtt	caa	gac	ctt	ctt	tca	aca	gtc	aat	aag	cct	gaa	tgg	cca	5209
Phe	Val	Gln	Asp	Leu	Leu	Ser	Thr	Val	Asn	Lys	Pro	Glu	Trp	Pro	
1565					1570					1575					
gct	gct	gaa	cta	ctc	ctt	agt	ttg	tta	ggg	aga	ctg	ttg	gtt	cat	5254
Ala	Ala	Glu	Leu	Leu	Leu	Ser	Leu	Leu	Gly	Arg	Leu	Leu	Val	His	
1580					1585					1590					
cag	ttc	agt	aac	aag	tca	aca	gag	atg	gct	tta	aga	gtg	gca	tct	5299

Gln 1595	Phe	Ser	Asn	Lys	Ser 1600	Thr	Glu	Met	Ala	Leu 1605	Arg	Val	Ala	Ser	
ctt Leu 1610	gat Asp	tac Tyr	ctt Leu	gga Gly	act Thr 1615	gtt Val	gct Ala	gca Ala	cgg Arg	cta Leu 1620	aga Arg	aaa Lys	gat Asp	gct Ala	5344
gtt Val 1625	aca Thr	agc Ser	aaa Lys	atg Met 1630	gat Asp 1630	caa Gln	gga Gly	tct Ser	ata Ile	gaa Glu 1635	cgc Arg	att Ile	tta Leu	aaa Lys	5389
cag Gln 1640	gtt Val	tca Ser	gga Gly	ggg Gly 1645	gaa Glu 1645	gat Asp	gaa Glu	atc Ile	caa Gln	caa Gln 1650	tta Leu	caa Gln	aaa Lys	gca Ala	5434
ttg Leu 1655	ctt Leu	gat Asp	tac Tyr	ttg Leu 1660	gat Asp 1660	gaa Glu	aac Asn	act Thr	gag Glu	act Thr 1665	gat Asp	cct Pro	tca Ser	cta Leu	5479
gtg Val 1670	ttt Phe	tct Ser	cgt Arg	aaa Lys 1675	ttc Phe 1675	tat Tyr	ata Ile	gcc Ala	cag Gln	tgg Trp 1680	ttt Phe	cga Arg	gac Asp	aca Thr	5524
act Thr 1685	ctg Leu	gaa Glu	aca Thr	gaa Glu 1690	aaa Lys 1690	gca Ala	atg Met	aaa Lys	tca Ser	caa Gln 1695	aaa Lys	gat Asp	gaa Glu	gaa Glu	5569
tca Ser 1700	tct Ser	gaa Glu	gga Gly	aca Thr 1705	cat His 1705	cat His	gca Ala	aag Lys	gaa Glu	att Ile 1710	gag Glu	aca Thr	act Thr	ggc Gly	5614
caa Gln 1715	att Ile	atg Met	cat His	cga Arg 1720	gct Ala 1720	gaa Glu	aac Asn	cga Arg	aaa Lys	aag Lys 1725	ttt Phe	ctt Leu	aga Arg	agc Ser	5659
att Ile 1730	atc Ile	aaa Lys	acc Thr	aca Thr 1735	cct Pro 1735	tct Ser	cag Gln	ttt Phe	agc Ser	aca Thr 1740	tta Leu	aag Lys	atg Met	aac Asn	5704
tct Ser 1745	gat Asp	act Thr	gtg Val	gac Asp 1750	tat Tyr 1750	gat Asp	gat Asp	gct Ala	tgc Cys	ttg Leu 1755	att Ile	gtt Val	cga Arg	tac Tyr	5749
ttg Leu 1760	gcc Ala	tcc Ser	atg Met	agg Arg 1765	ccg Pro 1765	ttt Phe	gcc Ala	cag Gln	agc Ser	ttt Phe 1770	gat Asp	att Ile	tat Tyr	ttg Leu	5794
aca Thr 1775	cag Gln	atc Ile	cta Leu	cga Arg 1780	gtt Val 1780	ctt Leu	ggt Gly	gaa Glu	aat Asn	gca Ala 1785	att Ile	gct Ala	gtt Val	cga Arg	5839
aca Thr 1790	aaa Lys	gcc Ala	atg Met	aag Lys 1795	tgt Cys 1795	ttg Leu	tct Ser	gag Glu	gtt Val	gtt Val 1800	gct Ala	gta Val	gac Asp	ccc Pro	5884
agt Ser	att Ile	cta Leu	gca Ala	agg Arg	ctt Leu	gat Asp	atg Met	caa Gln	cga Arg	ggt Gly	gtt Val	cat His	gga Gly	cga Arg	5929

1805		1810		1815		
ttg atg gat aat tcg act agt gtc cga gaa gca gca gta gaa tta					5974	
Leu Met Asp Asn Ser Thr Ser Val Arg Glu Ala Ala Val Glu Leu						
1820		1825		1830		
cta ggt cga ttt gtc ctt tgt cga cct cag ctt gct gaa cag tat					6019	
Leu Gly Arg Phe Val Leu Cys Arg Pro Gln Leu Ala Glu Gln Tyr						
1835		1840		1845		
tat gat atg ctg att gaa aga ata ttg gat act ggt atc agt gtc					6064	
Tyr Asp Met Leu Ile Glu Arg Ile Leu Asp Thr Gly Ile Ser Val						
1850		1855		1860		
agg aaa aga gta ata aag att ctc aga gac att tgt att gaa caa					6109	
Arg Lys Arg Val Ile Lys Ile Leu Arg Asp Ile Cys Ile Glu Gln						
1865		1870		1875		
cca aca ttt cca aaa atc aca gaa atg tgt gta aaa atg att cgc					6154	
Pro Thr Phe Pro Lys Ile Thr Glu Met Cys Val Lys Met Ile Arg						
1880		1885		1890		
aga gtc aat gat gaa gag ggc att aag aaa tta gta aat gaa aca					6199	
Arg Val Asn Asp Glu Glu Gly Ile Lys Lys Leu Val Asn Glu Thr						
1895		1900		1905		
ttc cag aaa ctc tgg ttt act cca act cca cac aat gac aaa gaa					6244	
Phe Gln Lys Leu Trp Phe Thr Pro Thr Pro His Asn Asp Lys Glu						
1910		1915		1920		
gca atg aca agg aaa att tta aac att acc gat gtg gtt gca gca					6289	
Ala Met Thr Arg Lys Ile Leu Asn Ile Thr Asp Val Val Ala Ala						
1925		1930		1935		
tgc aga gat act gga tat gac tgg ttt gag caa ctg ctt caa aac					6334	
Cys Arg Asp Thr Gly Tyr Asp Trp Phe Glu Gln Leu Leu Gln Asn						
1940		1945		1950		
ttg ttg aag tcc gaa gag gat tcc tca tat aaa cct gtg aag aaa					6379	
Leu Leu Lys Ser Glu Glu Asp Ser Ser Tyr Lys Pro Val Lys Lys						
1955		1960		1965		
gct tgt act caa ctt gtt gat aac cta gtt gag cac att ctt aaa					6424	
Ala Cys Thr Gln Leu Val Asp Asn Leu Val Glu His Ile Leu Lys						
1970		1975		1980		
tat gag gaa tct cta gct gac tct gac aat aaa ggt gtg aat tct					6469	
Tyr Glu Glu Ser Leu Ala Asp Ser Asp Asn Lys Gly Val Asn Ser						
1985		1990		1995		
gga aga ttg gta gct tgc ata acc act ttg ttc tta ttc agc aaa					6514	
Gly Arg Leu Val Ala Cys Ile Thr Thr Leu Phe Leu Phe Ser Lys						
2000		2005		2010		
ata aga ccc cag ctc atg gtt aaa cat gca atg act atg caa cca					6559	
Ile Arg Pro Gln Leu Met Val Lys His Ala Met Thr Met Gln Pro						
2015		2020		2025		

tac Tyr 2030	ctt Leu	acc Thr	act Thr	aaa Lys	tgt Cys 2035	agt Ser	acg Thr	caa Gln	aat Asn	gat Asp 2040	ttc Phe	atg Met	gtt Val	atc Ile	6604
tgc Cys 2045	aat Asn	gtt Val	gca Ala	aaa Lys	atc Ile 2050	cta Leu	gag Glu	cta Leu	gtt Val	gta Val 2055	cca Pro	ctg Leu	atg Met	gag Glu	6649
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tta Leu 2120	aaa Lys	agt Ser	caa Gln	cac His	caa Gln 2125	gag Glu	gac Asp	cca Pro	aat Asn	aac Asn 2130	act Thr	tca Ser	ctt Leu	cta Leu	6874
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ttt Phe 2180	aca Thr	aaa Lys	cac His	tca Ser	gat Asp 2185	gaa Glu	gaa Glu	gta Val	caa Gln	aca Thr 2190	aaa Lys	gct Ala	atc Ile	att Ile	7054
ggt Gly 2195	cta Leu	gga Gly	ttt Phe	gcc Ala	ttt Phe 2200	att Ile	cag Gln	cat His	cca Pro	agt Ser 2205	cta Leu	atg Met	ttc Phe	gag Glu	7099
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Trp	Lys	Lys	Val	Ala	Lys	Gln	Glu	Asp	Leu	Lys	Glu	Met	Gly	Asp	
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Val	Ser	Ser	Gly	Met	Ser	Ser	Ser	Ile	Met	Gln	Leu	Tyr	Leu	Lys	
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Gln	Val	Leu	Glu	Ala	Phe	Phe	His	Thr	Gln	Ser	Ser	Val	Arg	His	
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Phe	Ala	Leu	Asn	Val	Ile	Ala	Leu	Thr	Leu	Asn	Gln	Gly	Leu	Ile	
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His	Pro	Val	Gln	Cys	Val	Pro	Tyr	Leu	Ile	Ala	Met	Gly	Thr	Asp	
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Pro	Glu	Pro	Ala	Met	Arg	Asn	Lys	Ala	Asp	Gln	Gln	Leu	Val	Glu	
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Ala	Leu	Cys	Ser	His	Leu	Tyr	Ser	Met	Ile	Arg	Gly	Asn	Arg	Gln	
2390					2395					2400					
cac	aga	cga	gcc	ttt	ctt	att	tct	tta	ctc	aac	ctc	ttt	gat	gac	7729
His	Arg	Arg	Ala	Phe	Leu	Ile	Ser	Leu	Leu	Asn	Leu	Phe	Asp	Asp	
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Thr	Ala	Lys	Thr	Asp	Val	Thr	Met	Leu	Leu	Tyr	Ile	Ala	Asp	Asn	
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Leu	Ala	Cys	Phe	Pro	Tyr	Gln	Thr	Gln	Glu	Glu	Pro	Leu	Phe	Ile	
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gga Gly 2585	gtt Val	cat His	ttt Phe	cat His	cca Pro 2590	aaa Lys	caa Gln	aca Thr	ctg Leu	gac Asp 2595	ttc Phe	ctg Leu	cgg Arg	agt Ser	8269
gac Asp 2600	atg Met	gct Ala	aat Asn	tcc Ser	aaa Lys 2605	atc Ile	aca Thr	gaa Glu	gag Glu	gtg Val 2610	aaa Lys	agg Arg	agt Ser	ata Ile	8314
gta Val 2615	aaa Lys	cag Gln	tat Tyr	cta Leu	gat Asp 2620	ttc Phe	aaa Lys	ctt Leu	ctc Leu	atg Met 2625	gaa Glu	cat His	ctg Leu	gac Asp	8359
cct Pro 2630	gat Asp	gaa Glu	gaa Glu	gaa Glu	gaa Glu 2635	gaa Glu	ggg Gly	gag Glu	gtt Val	tca Ser 2640	gct Ala	agc Ser	aca Thr	aat Asn	8404
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 Glu Asp Arg Gly Gly Gly Thr Ser Gly Val Arg Arg Arg Arg Ser
 2675 2680 2685

caa cgt att tcg cag cgt att acg taa aatgattttt atgtgcttat 8586
 Gln Arg Ile Ser Gln Arg Ile Thr
 2690 2695

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gacaataaaa aaacagaaat gagattt 8733

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 <211> 2697
 <212> PRT
 <213> Homo sapiens

<400> 12

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 20 25 30

Pro Ala Thr Thr Thr Lys Ser Leu Leu Phe Asn Ala Arg Ile Ala Glu
 35 40 45

Glu Val Asn Cys Leu Leu Ala Cys Arg Asp Asp Asn Leu Val Ser Gln
 50 55 60

Leu Val His Ser Leu Asn Gln Val Ser Thr Asp His Ile Glu Leu Lys
 65 70 75 80

Asp Asn Leu Gly Ser Asp Asp Pro Glu Gly Asp Ile Pro Val Leu Leu
 85 90 95

Gln Ala Val Leu Ala Arg Ser Pro Asn Val Phe Arg Glu Lys Ser Met
 100 105 110

Gln Asn Arg Tyr Val Gln Ser Gly Met Met Met Ser Gln Tyr Lys Leu
 115 120 125

Ser Gln Asn Ser Met His Ser Ser Pro Ala Ser Ser Asn Tyr Gln Gln

130

135

140

Thr Thr Ile Ser His Ser Pro Ser Ser Arg Phe Val Pro Pro Gln Thr
145 150 155 160

Ser Ser Gly Asn Arg Phe Met Pro Gln Gln Asn Ser Pro Val Pro Ser
165 170 175

Pro Tyr Ala Pro Gln Ser Pro Ala Gly Tyr Met Pro Tyr Ser His Pro
180 185 190

Ser Ser Tyr Thr Thr His Pro Gln Met Gln Gln Ala Ser Val Ser Ser
195 200 205

Pro Ile Val Ala Gly Gly Leu Arg Asn Ile His Asp Asn Lys Val Ser
210 215 220

Gly Pro Leu Ser Gly Asn Ser Ala Asn His His Ala Asp Asn Pro Arg
225 230 235 240

His Gly Ser Ser Glu Asp Tyr Leu His Met Val His Arg Leu Ser Ser
245 250 255

Asp Asp Gly Asp Ser Ser Thr Met Arg Asn Ala Ala Ser Phe Pro Leu
260 265 270

Arg Ser Pro Gln Pro Val Cys Ser Pro Ala Gly Ser Glu Gly Thr Pro
275 280 285

Lys Gly Ser Arg Pro Pro Leu Ile Leu Gln Ser Gln Ser Leu Pro Cys
290 295 300

Ser Ser Pro Arg Asp Val Pro Pro Asp Ile Leu Leu Asp Ser Pro Glu
305 310 315 320

Arg Lys Gln Lys Lys Gln Lys Lys Met Lys Leu Gly Lys Asp Glu Lys
325 330 335

Glu Gln Ser Glu Lys Ala Ala Met Tyr Asp Ile Ile Ser Ser Pro Ser
340 345 350

Lys Asp Ser Thr Lys Leu Thr Leu Arg Leu Ser Arg Val Arg Ser Ser
355 360 365

Asp Met Asp Gln Gln Glu Asp Met Ile Ser Gly Val Glu Asn Ser Asn.
370 375 380

Val Ser Glu Asn Asp Ile Pro Phe Asn Val Gln Tyr Pro Gly Gln Thr
385 390 395 400

Ser Lys Thr Pro Ile Thr Pro Gln Asp Ile Asn Arg Pro Leu Asn Ala
405 410 415

Ala Gln Cys Leu Ser Gln Gln Glu Gln Thr Ala Phe Leu Pro Ala Asn
420 425 430

Gln Val Pro Val Leu Gln Gln Asn Thr Ser Val Ala Ala Lys Gln Pro
435 440 445

Gln Thr Ser Val Val Gln Asn Gln Gln Gln Ile Ser Gln Gln Gly Pro
450 455 460

Ile Tyr Asp Glu Val Glu Leu Asp Ala Leu Ala Glu Ile Glu Arg Ile
465 470 475 480

Glu Arg Glu Ser Ala Ile Glu Arg Glu Arg Phe Ser Lys Glu Val Gln
485 490 495

Asp Lys Asp Lys Pro Leu Lys Lys Arg Lys Gln Asp Ser Tyr Pro Gln
500 505 510

Glu Ala Gly Gly Ala Thr Gly Gly Asn Arg Pro Ala Ser Gln Glu Thr
515 520 525

Gly Ser Thr Gly Asn Gly Ser Arg Pro Ala Leu Met Val Ser Ile Asp
530 535 540

Leu His Gln Ala Gly Arg Val Asp Ser Gln Ala Ser Ile Thr Gln Asp
545 550 555 560

Ser Asp Ser Ile Lys Lys Pro Glu Glu Ile Lys Gln Cys Asn Asp Ala
565 570 575

Pro Val Ser Val Leu Gln Glu Asp Ile Val Gly Ser Leu Lys Ser Thr
580 585 590

Pro Glu Asn His Pro Glu Thr Pro Lys Lys Lys Ser Asp Pro Glu Leu
595 600 605

Ser Lys Ser Glu Met Lys Gln Ser Glu Ser Arg Leu Ala Glu Ser Lys
610 615 620

Pro Asn Glu Asn Arg Leu Val Glu Thr Lys Ser Ser Glu Asn Lys Leu
625 630 635 640

Glu Thr Lys Val Glu Thr Gln Thr Glu Glu Leu Lys Gln Asn Glu Ser
645 650 655

Arg Thr Thr Glu Cys Lys Gln Asn Glu Ser Thr Ile Val Glu Pro Lys
660 665 670

Gln Asn Glu Asn Arg Leu Ser Asp Thr Lys Pro Asn Asp Asn Lys Gln
675 680 685

Asn Asn Gly Arg Ser Glu Thr Thr Lys Ser Arg Pro Glu Thr Pro Lys
690 695 700

Gln Lys Gly Glu Ser Arg Pro Glu Thr Pro Lys Gln Lys Ser Asp Gly
705 710 715 720

His Pro Glu Thr Pro Lys Gln Lys Gly Asp Gly Arg Pro Glu Thr Pro
725 730 735

Lys Gln Lys Gly Glu Ser Arg Pro Glu Thr Pro Lys Gln Lys Asn Glu
740 745 750

Gly Arg Pro Glu Thr Pro Lys His Arg His Asp Asn Arg Arg Asp Ser
755 760 765

Gly Lys Pro Ser Thr Glu Lys Lys Pro Glu Val Ser Lys His Lys Gln
770 775 780

Asp Thr Lys Ser Asp Ser Pro Arg Leu Lys Ser Glu Arg Ala Glu Ala
785 790 795 800

Leu Lys Gln Arg Pro Asp Gly Arg Ser Val Ser Glu Ser Leu Arg Arg
805 810 815

Asp His Asp Asn Lys Gln Lys Ser Asp Asp Arg Gly Glu Ser Glu Arg
820 825 830

His Arg Gly Asp Gln Ser Arg Val Arg Arg Pro Glu Thr Leu Arg Ser
835 840 845

Ser Ser Arg Asn Glu His Gly Ile Lys Ser Asp Ser Ser Lys Thr Asp
850 855 860

Lys Leu Glu Arg Lys His Arg His Glu Ser Gly Asp Ser Arg Glu Arg
865 870 875 880

Pro Ser Ser Gly Glu Gln Lys Ser Arg Pro Asp Ser Pro Arg Val Lys
885 890 895

Gln Gly Asp Ser Asn Lys Ser Arg Ser Asp Lys Leu Gly Phe Lys Ser
900 905 910

Pro Thr Ser Lys Asp Asp Lys Arg Thr Glu Gly Asn Lys Ser Lys Val
915 920 925

Asp Thr Asn Lys Ala His Pro Asp Asn Lys Ala Glu Phe Pro Ser Tyr
930 935 940

Leu Leu Gly Gly Arg Ser Gly Ala Leu Lys Asn Phe Val Ile Pro Lys
945 950 955 960

Ile Lys Arg Asp Lys Asp Gly Asn Val Thr Gln Glu Thr Lys Lys Met
965 970 975

Glu Met Lys Gly Glu Pro Lys Asp Lys Val Glu Lys Ile Gly Leu Val
980 985 990

Glu Asp Leu Asn Lys Gly Ala Lys Pro Val Val Val Leu Gln Lys Leu
995 1000 1005

Ser Leu Asp Asp Val Gln Lys Leu Ile Lys Asp Arg Glu Asp Lys
1010 1015 1020

Ser Arg Ser Ser Leu Lys Pro Ile Lys Asn Lys Pro Ser Lys Ser
1025 1030 1035

Asn Lys Gly Ser Ile Asp Gln Ser Val Leu Lys Glu Leu Pro Pro

1040

1045

1050

Glu Leu Leu Ala Glu Ile Glu Ser Thr Met Pro Leu Cys Glu Arg
 1055 1060 1065

Val Lys Met Asn Lys Arg Lys Arg Ser Thr Val Asn Glu Lys Pro
 1070 1075 1080

Lys Tyr Ala Glu Ile Ser Ser Asp Glu Asp Asn Asp Ser Asp Glu
 1085 1090 1095

Ala Phe Glu Ser Ser Arg Lys Arg His Lys Lys Asp Asp Asp Lys
 1100 1105 1110

Ala Trp Glu Tyr Glu Glu Arg Asp Arg Arg Ser Ser Gly Asp His
 1115 1120 1125

Arg Arg Ser Gly His Ser His Glu Gly Arg Arg Ser Ser Gly Gly
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Gly Arg Tyr Arg Asn Arg Ser Pro Ser Asp Ser Asp Met Glu Asp
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Tyr Ser Pro Pro Pro Ser Leu Ser Glu Val Ala Arg Lys Met Lys
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Lys Lys Glu Lys Gln Lys Lys Arg Lys Ala Tyr Glu Pro Lys Leu
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Thr Pro Glu Glu Met Met Asp Ser Ser Thr Phe Lys Arg Phe Thr
 1190 1195 1200

Ala Ser Ile Glu Asn Ile Leu Asp Asn Leu Glu Asp Met Asp Phe
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Thr Ala Phe Gly Asp Asp Asp Glu Ile Pro Gln Glu Leu Leu Leu
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Gly Lys His Gln Leu Asn Glu Leu Gly Ser Glu Ser Ala Lys Ile
 1235 1240 1245

Lys Ala Met Gly Ile Met Asp Lys Leu Ser Thr Asp Lys Thr Val
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Lys Val Leu Asn Ile Leu Glu Lys Asn Ile Gln Asp Gly Ser Lys
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Leu Ser Thr Leu Leu Asn His Asn Asn Asp Thr Glu Glu Glu Glu
1280 1285 1290

Arg Leu Trp Arg Asp Leu Ile Met Glu Arg Val Thr Lys Ser Ala
1295 1300 1305

Asp Ala Cys Leu Thr Thr Ile Asn Ile Met Thr Ser Pro Asn Met
1310 1315 1320

Pro Lys Ala Val Tyr Ile Glu Asp Val Ile Glu Arg Val Ile Gln
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Tyr Thr Lys Phe His Leu Gln Asn Thr Leu Tyr Pro Gln Tyr Asp
1340 1345 1350

Pro Val Tyr Arg Leu Asp Pro His Gly Gly Gly Leu Leu Ser Ser
1355 1360 1365

Lys Ala Lys Arg Ala Lys Cys Ser Thr His Lys Gln Arg Val Ile
1370 1375 1380

Val Met Leu Tyr Asn Lys Val Cys Asp Ile Val Ser Ser Leu Ser
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Glu Leu Leu Glu Ile Gln Leu Leu Thr Asp Thr Thr Ile Leu Gln
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Val Ser Ser Met Gly Ile Thr Pro Phe Phe Val Glu Asn Val Ser
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Glu Leu Gln Leu Cys Ala Ile Lys Leu Val Thr Ala Val Phe Ser
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Arg Tyr Glu Lys His Arg Gln Leu Ile Leu Glu Glu Ile Phe Thr
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Ser Leu Ala Arg Leu Pro Thr Ser Lys Arg Ser Leu Arg Asn Phe
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Arg Leu Asn Ser Ser Asp Met Asp Gly Glu Pro Met Tyr Ile Gln
1475 1480 1485

Met Val Thr Ala Leu Val Leu Gln Leu Ile Gln Cys Val Val His
1490 1495 1500

Leu Pro Ser Ser Glu Lys Asp Ser Asn Ala Glu Glu Asp Ser Asn
1505 1510 1515

Lys Lys Ile Asp Gln Asp Val Val Ile Thr Asn Ser Tyr Glu Thr
1520 1525 1530

Ala Met Arg Thr Ala Gln Asn Phe Leu Ser Ile Phe Leu Lys Lys
1535 1540 1545

Cys Gly Ser Lys Gln Gly Glu Glu Asp Tyr Arg Pro Leu Phe Glu
1550 1555 1560

Asn Phe Val Gln Asp Leu Leu Ser Thr Val Asn Lys Pro Glu Trp
1565 1570 1575

Pro Ala Ala Glu Leu Leu Leu Ser Leu Leu Gly Arg Leu Leu Val
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His Gln Phe Ser Asn Lys Ser Thr Glu Met Ala Leu Arg Val Ala
1595 1600 1605

Ser Leu Asp Tyr Leu Gly Thr Val Ala Ala Arg Leu Arg Lys Asp
1610 1615 1620

Ala Val Thr Ser Lys Met Asp Gln Gly Ser Ile Glu Arg Ile Leu
1625 1630 1635

Lys Gln Val Ser Gly Gly Glu Asp Glu Ile Gln Gln Leu Gln Lys
1640 1645 1650

Ala Leu Leu Asp Tyr Leu Asp Glu Asn Thr Glu Thr Asp Pro Ser
1655 1660 1665

Leu Val Phe Ser Arg Lys Phe Tyr Ile Ala Gln Trp Phe Arg Asp
1670 1675 1680

Thr Thr Leu Glu Thr Glu Lys Ala Met Lys Ser Gln Lys Asp Glu
1685 1690 1695

Glu Ser Ser Glu Gly Thr His His Ala Lys Glu Ile Glu Thr Thr
1700 1705 1710

Gly Gln Ile Met His Arg Ala Glu Asn Arg Lys Lys Phe Leu Arg
1715 1720 1725

Ser Ile Ile Lys Thr Thr Pro Ser Gln Phe Ser Thr Leu Lys Met
1730 1735 1740

Asn Ser Asp Thr Val Asp Tyr Asp Asp Ala Cys Leu Ile Val Arg
1745 1750 1755

Tyr Leu Ala Ser Met Arg Pro Phe Ala Gln Ser Phe Asp Ile Tyr
1760 1765 1770

Leu Thr Gln Ile Leu Arg Val Leu Gly Glu Asn Ala Ile Ala Val
1775 1780 1785

Arg Thr Lys Ala Met Lys Cys Leu Ser Glu Val Val Ala Val Asp
1790 1795 1800

Pro Ser Ile Leu Ala Arg Leu Asp Met Gln Arg Gly Val His Gly
1805 1810 1815

Arg Leu Met Asp Asn Ser Thr Ser Val Arg Glu Ala Ala Val Glu
1820 1825 1830

Leu Leu Gly Arg Phe Val Leu Cys Arg Pro Gln Leu Ala Glu Gln
1835 1840 1845

Tyr Tyr Asp Met Leu Ile Glu Arg Ile Leu Asp Thr Gly Ile Ser
1850 1855 1860

Val Arg Lys Arg Val Ile Lys Ile Leu Arg Asp Ile Cys Ile Glu
1865 1870 1875

Gln Pro Thr Phe Pro Lys Ile Thr Glu Met Cys Val Lys Met Ile
1880 1885 1890

Arg Arg Val Asn Asp Glu Glu Gly Ile Lys Lys Leu Val Asn Glu

1895	1900	1905
Thr Phe Gln Lys Leu Trp 1910	Phe Thr Pro Thr Pro 1915	His Asn Asp Lys 1920
Glu Ala Met Thr Arg Lys 1925	Ile Leu Asn Ile Thr 1930	Asp Val Val Ala 1935
Ala Cys Arg Asp Thr Gly 1940	Tyr Asp Trp Phe Glu 1945	Gln Leu Leu Gln 1950
Asn Leu Leu Lys Ser Glu 1955	Glu Asp Ser Ser Tyr 1960	Lys Pro Val Lys 1965
Lys Ala Cys Thr Gln Leu 1970	Val Asp Asn Leu Val 1975	Glu His Ile Leu 1980
Lys Tyr Glu Glu Ser Leu 1985	Ala Asp Ser Asp Asn 1990	Lys Gly Val Asn 1995
Ser Gly Arg Leu Val Ala 2000	Cys Ile Thr Thr Leu 2005	Phe Leu Phe Ser 2010
Lys Ile Arg Pro Gln Leu 2015	Met Val Lys His Ala 2020	Met Thr Met Gln 2025
Pro Tyr Leu Thr Thr Lys 2030	Cys Ser Thr Gln Asn 2035	Asp Phe Met Val 2040
Ile Cys Asn Val Ala Lys 2045	Ile Leu Glu Leu Val 2050	Val Pro Leu Met 2055
Glu His Pro Ser Glu Thr 2060	Phe Leu Ala Thr Ile 2065	Glu Glu Asp Leu 2070
Met Lys Leu Ile Ile Lys 2075	Tyr Gly Met Thr Val 2080	Val Gln His Cys 2085
Val Ser Cys Leu Gly Ala 2090	Val Val Asn Lys Val 2095	Thr Gln Asn Phe 2100
Lys Phe Val Trp Ala Cys 2105	Phe Asn Arg Tyr Tyr 2110	Gly Ala Ile Ser 2115

Lys	Leu	Lys	Ser	Gln	His	Gln	Glu	Asp	Pro	Asn	Asn	Thr	Ser	Leu
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Leu	Thr	Asn	Lys	Pro	Ala	Leu	Leu	Arg	Ser	Leu	Phe	Thr	Val	Gly
2135						2140					2145			
Ala	Leu	Cys	Arg	His	Phe	Asp	Phe	Asp	Leu	Glu	Asp	Phe	Lys	Gly
2150						2155					2160			
Asn	Ser	Lys	Val	Asn	Ile	Lys	Asp	Lys	Val	Leu	Glu	Leu	Leu	Met
2165						2170					2175			
Tyr	Phe	Thr	Lys	His	Ser	Asp	Glu	Glu	Val	Gln	Thr	Lys	Ala	Ile
2180						2185					2190			
Ile	Gly	Leu	Gly	Phe	Ala	Phe	Ile	Gln	His	Pro	Ser	Leu	Met	Phe
2195						2200					2205			
Glu	Gln	Glu	Val	Lys	Asn	Leu	Tyr	Asn	Asn	Ile	Leu	Ser	Asp	Lys
2210						2215					2220			
Asn	Ser	Ser	Val	Asn	Leu	Lys	Ile	Gln	Val	Leu	Lys	Asn	Leu	Gln
2225						2230					2235			
Thr	Tyr	Leu	Gln	Glu	Glu	Asp	Thr	Arg	Met	Gln	Gln	Ala	Asp	Arg
2240						2245					2250			
Asp	Trp	Lys	Lys	Val	Ala	Lys	Gln	Glu	Asp	Leu	Lys	Glu	Met	Gly
2255						2260					2265			
Asp	Val	Ser	Ser	Gly	Met	Ser	Ser	Ser	Ile	Met	Gln	Leu	Tyr	Leu
2270						2275					2280			
Lys	Gln	Val	Leu	Glu	Ala	Phe	Phe	His	Thr	Gln	Ser	Ser	Val	Arg
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Asn Leu Ala Cys Phe Pro Tyr Gln Thr Gln Glu Glu Pro Leu Phe
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Ile Met His His Ile Asp Ile Thr Leu Ser Val Ser Gly Ser Asn
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Leu Leu Gln Ser Phe Lys Glu Ser Met Val Lys Asp Lys Arg Lys
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Glu Arg Lys Ser Ser Pro Ser Lys Glu Asn Glu Ser Ser Asp Ser
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Val Ser Gln Gly Ile Leu Leu Leu Leu Met Leu Lys Gln His Leu
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Lys Asn Leu Cys Gly Phe Ser Asp Ser Lys Ile Gln Lys Tyr Ser
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Pro Ser Glu Ser Ala Lys Val Tyr Asp Lys Ala Ile Asn Arg Lys
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Thr Gly Val His Phe His Pro Lys Gln Thr Leu Asp Phe Leu Arg
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Pro Lys Asn Asn Thr Ala Ala Glu Thr Glu Asp Asp Glu Ser Asp
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atg gcg cac gaa tcc gag agg agc tct cgt ctc ggg gtg ccc tgc ggg Met Ala His Glu Ser Glu Arg Ser Ser Arg Leu Gly Val Pro Cys Gly 1 5 10 15	168
gag ccg gca gag ctc gga ggt gat gct agc gag gag gat cac ccc caa Glu Pro Ala Glu Leu Gly Gly Asp Ala Ser Glu Glu Asp His Pro Gln 20 25 30	216
gtc tgt gcc aag tgc tgc gca caa ttc act gac cca act gaa ttc ctc Val Cys Ala Lys Cys Cys Ala Gln Phe Thr Asp Pro Thr Glu Phe Leu 35 40 45	264
gcc cac cag aac gca tgt tct act gac cct cct gta atg gtg ata att Ala His Gln Asn Ala Cys Ser Thr Asp Pro Pro Val Met Val Ile Ile 50 55 60	312
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ctg gga gca acc cca tta cct cca gaa tcg acc cct gca ccc cct cct Leu Gly Ala Thr Pro Leu Pro Pro Glu Ser Thr Pro Ala Pro Pro Pro 145 150 155 160	600
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Thr Pro Gly Gly Gly Val Glu Arg Lys Pro Leu Val Ala Ser Thr Thr	
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Ala Leu Ser Ala Thr Glu Ser Leu Thr Leu Leu Ser Thr Ser Ala Gly	
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Thr Ala Thr Ala Pro Gly Leu Pro Ala Phe Asn Lys Phe Val Leu Met	
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Lys Ala Val Glu Pro Lys Asn Lys Ala Asp Glu Asn Thr Pro Pro Gly	
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Leu Thr Asn His Phe Lys Ser Thr Gly Ser Phe Pro Phe Pro Tyr Val	
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Gln	Gln	His	Val	Arg	Met	His	Leu	Gly	Gly	Gln	Ile	Pro	Asn	Gly	Gly		
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act	gca	ctc	cct	gaa	ggg	gga	gga	gct	gct	cag	gag	aat	ggc	tcc	gag	2328	
Thr	Ala	Leu	Pro	Glu	Gly	Gly	Gly	Ala	Ala	Gln	Glu	Asn	Gly	Ser	Glu		
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Gln	Ser	Thr	Val	Ser	Gly	Ala	Gly	Ser	Phe	Pro	Gln	Gln	Ser	Gln			
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Ala	Thr	Ala	Gly	Lys	Glu	Met	Asp	Ser	Asn	Glu	Lys	Thr	Thr	Gln	Gln		
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Ser	Ser	Leu	Pro	Pro	Pro	Pro	Pro	Pro	Asp	Ser	Leu	Asp	Gln	Pro	Gln		
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Pro	Met	Glu	Gln	Gly	Ser	Ser	Gly	Val	Leu	Gly	Gly	Lys	Glu	Glu	Gly		
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Gly	Lys	Pro	Glu	Arg	Ser	Ser	Ser	Pro	Ala	Ser	Ala	Leu	Thr	Pro	Glu		
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Val	Cys	Ala	Lys	Cys	Cys	Ala	Gln	Phe	Thr	Asp	Pro	Thr	Glu	Phe	Leu
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Ala	His	Gln	Asn	Ala	Cys	Ser	Thr	Asp	Pro	Pro	Val	Met	Val	Ile	Ile
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Gly	Gly	Gln	Glu	Asn	Pro	Asn	Asn	Ser	Ser	Ala	Ser	Ser	Glu	Pro	Arg
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Pro	Glu	Gly	His	Asn	Asn	Pro	Gln	Val	Met	Asp	Thr	Glu	His	Ser	Asn
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Pro	Pro	Asp	Ser	Gly	Ser	Ser	Val	Pro	Thr	Asp	Pro	Thr	Trp	Gly	Pro
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Glu	Arg	Arg	Gly	Glu	Glu	Ser	Ser	Gly	His	Phe	Leu	Val	Ala	Ala	Thr
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Gly	Thr	Ala	Ala	Gly	Gly	Gly	Gly	Gly	Leu	Ile	Leu	Ala	Ser	Pro	Lys
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Pro Pro Pro Pro Pro Pro Pro Pro Gly Val Gly Ser Gly His Leu Asn
165 170 175

Ile Pro Leu Ile Leu Glu Glu Leu Arg Val Leu Gln Gln Arg Gln Ile
180 185 190

His Gln Met Gln Met Thr Glu Gln Ile Cys Arg Gln Val Leu Leu Leu
195 200 205

Gly Ser Leu Gly Gln Thr Val Gly Ala Pro Ala Ser Pro Ser Glu Leu
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Pro Gly Thr Gly Thr Ala Ser Ser Thr Lys Pro Leu Leu Pro Leu Phe
225 230 235 240

Ser Pro Ile Lys Pro Val Gln Thr Ser Lys Thr Leu Ala Ser Ser Ser
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Ser Ser Ser Ser Ser Ser Ser Gly Ala Glu Thr Pro Lys Gln Ala Phe
260 265 270

Phe His Leu Tyr His Pro Leu Gly Ser Gln His Pro Phe Ser Ala Gly
275 280 285

Gly Val Gly Arg Ser His Lys Pro Thr Pro Ala Pro Ser Pro Ala Leu
290 295 300

Pro Gly Ser Thr Asp Gln Leu Ile Ala Ser Pro His Leu Ala Phe Pro
305 310 315 320

Ser Thr Thr Gly Leu Leu Ala Ala Gln Cys Leu Gly Ala Ala Arg Gly
325 330 335

Leu Glu Ala Thr Ala Ser Pro Gly Leu Leu Lys Pro Lys Asn Gly Ser
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Gly Glu Leu Ser Tyr Gly Glu Val Met Gly Pro Leu Glu Lys Pro Gly
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Gly Arg His Lys Cys Arg Phe Cys Ala Lys Val Phe Gly Ser Asp Ser

370

375

380

Ala Leu Gln Ile His Leu Arg Ser His Thr Gly Glu Arg Pro Tyr Lys
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Arg Met Gln Leu Ser Lys Leu Val Thr Ser Leu Pro Ser Trp Ala Leu
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Leu Thr Asn His Phe Lys Ser Thr Gly Ser Phe Pro Phe Pro Tyr Val
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Phe Lys Cys Lys Val Cys Gly Arg Ala Phe Ser Thr Arg Gly Asn Leu
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Gln Gln His Val Arg Met His Leu Gly Gly Gln Ile Pro Asn Gly Gly
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725 730 735

Gln Ser Thr Val Ser Gly Ala Gly Ser Phe Pro Gln Gln Gln Ser Gln
740 745 750

Gln Pro Ser Pro Glu Glu Glu Leu Ser Glu Glu Glu Glu Glu Glu Asp
755 760 765

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785 790 795 800

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Pro Met Glu Gln Gly Ser Ser Gly Val Leu Gly Gly Lys Glu Glu Gly
850 855 860

Gly Lys Pro Glu Arg Ser Ser Ser Pro Ala Ser Ala Leu Thr Pro Glu
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Lys Thr His Pro Lys Glu Gly Pro Leu Phe Thr Cys Val Phe Cys Arg
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Gln Gly Phe Leu Glu Arg Ala Thr Leu Lys Lys His Met Leu Leu Ala
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His His Gln Asn Gln Tyr Val Ala Phe Leu Ser Asn Gly Leu Pro Met
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Lys Pro Trp Asn Ser Ser Ser Thr Ser Thr Thr Thr Pro Ser Leu Ala
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Pro Pro Val Leu Phe Gly Leu Gly Thr Val Ala Gly Lys Val Pro Pro
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 Thr Pro Pro Ile Thr Pro Ser Ser Ser Phe Arg Ser Ser Thr Pro Thr
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 Gly Ser Glu Tyr Asp Glu Glu Glu Val Asp Tyr Glu Glu Ser Asp Ser
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 Asp Glu Ser Trp Thr Thr Glu Ser Ala Ile Ser Ser Glu Ala Ile Leu
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Lys Cys Arg Cys Gly Lys Ser Tyr Lys Thr Ala Gln Gly Leu Arg His	
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			20					25					30		

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Glu Leu Gln Gln Pro Thr Tyr Val Ala Leu Ser Tyr Ile Asn Arg Phe
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Met Thr Asp Ala Ala Arg Arg Glu Gln Glu Ser Leu Lys Lys Lys Ile
65 70 75 80

Gln Pro Lys Leu Ser Leu Thr Leu Ser Ser Ser Val Ser Arg Gly Asn
85 90 95

Val Ser Thr Pro Pro Arg His Ser Ser Gly Ser Leu Thr Pro Pro Val
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Thr Pro Pro Ile Thr Pro Ser Ser Ser Phe Arg Ser Ser Thr Pro Thr
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Gly Ser Glu Tyr Asp Glu Glu Glu Val Asp Tyr Glu Glu Ser Asp Ser
130 135 140

Asp Glu Ser Trp Thr Thr Glu Ser Ala Ile Ser Ser Glu Ala Ile Leu
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Ser Ser Met Cys Met Asn Gly Gly Glu Glu Lys Pro Phe Ala Cys Pro
165 170 175

Val Pro Gly Cys Lys Lys Arg Tyr Lys Asn Val Asn Gly Ile Lys Tyr
180 185 190

His Ala Lys Asn Gly His Arg Thr Gln Ile Arg Val Arg Lys Pro Phe
195 200 205

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 Asn Gly Cys Arg Leu Pro Arg Arg Gly Arg Arg Arg Gly Gly Arg Arg
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cga act gtg ggc ccc ggc ccc att cat tgc cgt ggc cgg cgg gca ctg 145
 Arg Thr Val Gly Pro Gly Pro Ile His Cys Arg Gly Arg Arg Ala Leu
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ggg ccc cgt gtt ttc aga gtc atg gag gcg cta att cct gtc ata aac 193
 Gly Pro Arg Val Phe Arg Val Met Glu Ala Leu Ile Pro Val Ile Asn
 50 55 60

aag ctc cag gac gtc ttc aac acg gtg ggc gcc gac atc atc cag ctg 241
 Lys Leu Gln Asp Val Phe Asn Thr Val Gly Ala Asp Ile Ile Gln Leu
 65 70 75

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 Pro Gln Ile Val Val Val Gly Thr Gln Ser Ser Gly Lys Ser Ser Val
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cta gaa agc ctg gtg ggg agg gac ctg ctt ccc aga ggt act gga att 337
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 Val Thr Arg Arg Pro Leu Ile Leu Gln Leu Val His Val Thr Gln Glu
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 Asp Lys Arg Lys Thr Thr Gly Glu Glu Asn Gly Val Glu Ala Glu Glu
 130 135 140

tgg ggt aaa ttt ctt cac acc aaa aat aag ctt tac acg gat ttt gat 481
 Trp Gly Lys Phe Leu His Thr Lys Asn Lys Leu Tyr Thr Asp Phe Asp
 145 150 155

gaa att cga caa gaa att gaa aat gaa aca gaa aga att tca gga aat 529
 Glu Ile Arg Gln Glu Ile Glu Asn Glu Thr Glu Arg Ile Ser Gly Asn
 160 165 170

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 Asn Lys Gly Val Ser Pro Glu Pro Ile His Leu Lys Ile Phe Ser Pro
 175 180 185 190

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Thr Ala Ile Arg Asn Ala Thr Gly Pro Arg Pro Ala Leu Phe Val Pro	
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Glu Pro Ser Leu Arg Cys Val Glu Leu Val His Glu Glu Met Gln Arg	
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Ile Ile Gln His Cys Ser Asn Tyr Ser Thr Gln Glu Leu Leu Arg Phe	
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Pro Lys Leu His Asp Ala Ile Val Glu Val Val Thr Cys Leu Leu Arg	
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Lys Arg Leu Pro Val Thr Asn Glu Met Val His Asn Leu Val Ala Ile	
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Glu Leu Ala Tyr Ile Asn Thr Lys His Pro Asp Phe Ala Asp Ala Cys	
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Gly Leu Met Asn Asn Asn Ile Glu Glu Gln Arg Arg Asn Arg Leu Ala	
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Arg Glu Leu Pro Ser Ala Val Ser Arg Asp Lys Ser Ser Lys Val Pro	
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Ser Ala Leu Ala Pro Ala Ser Gln Glu Pro Ser Pro Ala Ala Ser Ala	
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Glu Ala Asp Gly Lys Leu Ile Gln Asp Ser Arg Arg Glu Thr Lys Asn	
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Arg Val Phe Arg Val Met Glu Ala Leu Ile Pro Val Ile Asn Lys Leu
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Gln Asp Val Phe Asn Thr Val Gly Ala Asp Ile Ile Gln Leu Pro Gln
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Ile Val Val Val Gly Thr Gln Ser Ser Gly Lys Ser Ser Val Leu Glu
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Ser Leu Val Gly Arg Asp Leu Leu Pro Arg Gly Thr Gly Ile Val Thr
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Arg Arg Pro Leu Ile Leu Gln Leu Val His Val Thr Gln Glu Asp Lys
 115 120 125

Arg Lys Thr Thr Gly Glu Glu Asn Gly Val Glu Ala Glu Glu Trp Gly

130

135

140

Lys Phe Leu His Thr Lys Asn Lys Leu Tyr Thr Asp Phe Asp Glu Ile
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Arg Gln Glu Ile Glu Asn Glu Thr Glu Arg Ile Ser Gly Asn Asn Lys
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Gly Val Ser Pro Glu Pro Ile His Leu Lys Ile Phe Ser Pro Asn Val
 180 185 190

Val Asn Leu Thr Leu Val Asp Leu Pro Gly Met Thr Lys Val Pro Val
 195 200 205

Gly Asp Gln Pro Lys Asp Ile Glu Leu Gln Ile Arg Glu Leu Ile Leu
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Arg Phe Ile Ser Asn Pro Asn Ser Ile Ile Leu Ala Val Thr Ala Ala
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Asn Thr Asp Met Ala Thr Ser Glu Ala Leu Lys Ile Ser Arg Glu Val
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Asp Pro Asp Gly Arg Arg Thr Leu Ala Val Ile Thr Lys Leu Asp Leu
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Met Asp Ala Gly Thr Asp Ala Met Asp Val Leu Met Gly Arg Val Ile
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Pro Val Lys Leu Gly Ile Ile Gly Val Val Asn Arg Ser Gln Leu Asp
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Ile Asn Asn Lys Lys Ser Val Thr Asp Ser Ile Arg Asp Glu Tyr Ala
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Phe Leu Gln Lys Lys Tyr Pro Ser Leu Ala Asn Arg Asn Gly Thr Lys
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Tyr Leu Ala Arg Thr Leu Asn Arg Leu Leu Met His His Ile Arg Asp
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Cys Leu Pro Glu Leu Lys Thr Arg Ile Asn Val Leu Ala Ala Gln Tyr
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Gln Ser Leu Leu Asn Ser Tyr Gly Glu Pro Val Asp Asp Lys Ser Ala
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Thr Leu Leu Gln Leu Ile Thr Lys Phe Ala Thr Glu Tyr Cys Asn Thr
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Ala Arg Ile Cys Tyr Ile Phe His Glu Thr Phe Gly Arg Thr Leu Glu
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Gln His Cys Ser Asn Tyr Ser Thr Gln Glu Leu Leu Arg Phe Pro Lys
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Glu Glu Lys Ser Lys Pro Ile Pro Ile Met Pro Ala Ser Pro Gln Lys
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675 680 685

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Lys Ala Val Met His Phe Leu Val Asn His Val Lys Asp Thr Leu Gln
725 730 735

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740 745 750

Leu Thr Glu Ser Glu Asp Met Ala Gln Arg Arg Lys Glu Ala Ala Asp
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Asn	Gly	Cys	Arg	Leu	Pro	Arg	Arg	Gly	Arg	Arg	Arg	Gly	Gly	Arg	Arg	
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Arg	Thr	Val	Gly	Pro	Gly	Pro	Ile	His	Cys	Arg	Gly	Arg	Arg	Ala	Leu	
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Gly	Pro	Arg	Val	Phe	Arg	Val	Met	Glu	Ala	Leu	Ile	Pro	Val	Ile	Asn	
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Lys	Leu	Gln	Asp	Val	Phe	Asn	Thr	Val	Gly	Ala	Asp	Ile	Ile	Gln	Leu	
		65					70					75				

cct	caa	atc	gtc	gta	gtg	gga	acg	cag	agc	agc	gga	aag	agc	tca	gtg	289
Pro	Gln	Ile	Val	Val	Val	Gly	Thr	Gln	Ser	Ser	Gly	Lys	Ser	Ser	Val	
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cta	gaa	agc	ctg	gtg	ggg	agg	gac	ctg	ctt	ccc	aga	ggt	act	gga	att	337
Leu	Glu	Ser	Leu	Val	Gly	Arg	Asp	Leu	Leu	Pro	Arg	Gly	Thr	Gly	Ile	
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Val	Thr	Arg	Arg	Pro	Leu	Ile	Leu	Gln	Leu	Val	His	Val	Thr	Gln	Glu	
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Glu	Ile	Arg	Gln	Glu	Ile	Glu	Asn	Glu	Thr	Glu	Arg	Ile	Ser	Gly	Asn	
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Asn	Lys	Gly	Val	Ser	Pro	Glu	Pro	Ile	His	Leu	Lys	Ile	Phe	Ser	Pro	
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Pro	Val	Gly	Asp	Gln	Pro	Lys	Asp	Ile	Glu	Leu	Gln	Ile	Arg	Glu	Leu															
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Gly	Gly	Ala	Arg	Ile	Cys	Tyr	Ile	Phe	His	Glu	Thr	Phe	Gly	Arg	Thr															
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Cys Glu Val Ile Glu Arg Leu Ile Lys Ser Tyr Phe Leu Ile Val Arg	
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Lys Asn Ile Gln Asp Ser Val Pro Lys Ala Val Met His Phe Leu Val	
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Asn His Val Lys Asp Thr Leu Gln Ser Glu Leu Val Gly Gln Leu Tyr	
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aaa tca tcc tta ttg gat gat ctt ctg aca gaa tct gag gac atg gca	2209
Lys Ser Ser Leu Leu Asp Asp Leu Leu Thr Glu Ser Glu Asp Met Ala	
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Arg Val Phe Arg Val Met Glu Ala Leu Ile Pro Val Ile Asn Lys Leu

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55

60

Gln Asp Val Phe Asn Thr Val Gly Ala Asp Ile Ile Gln Leu Pro Gln
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Ile Val Val Val Gly Thr Gln Ser Ser Gly Lys Ser Ser Val Leu Glu
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Lys Phe Leu His Thr Lys Asn Lys Leu Tyr Thr Asp Phe Asp Glu Ile
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Gly Val Ser Pro Glu Pro Ile His Leu Lys Ile Phe Ser Pro Asn Val
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Val Asn Leu Thr Leu Val Asp Leu Pro Gly Met Thr Lys Val Pro Val
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Gly Asp Gln Pro Lys Asp Ile Glu Leu Gln Ile Arg Glu Leu Ile Leu
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Ile Asn Asn Lys Lys Ser Val Thr Asp Ser Ile Arg Asp Glu Tyr Ala
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Phe Leu Gln Lys Lys Tyr Pro Ser Leu Ala Asn Arg Asn Gly Thr Lys
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Tyr Leu Ala Arg Thr Leu Asn Arg Leu Leu Met His His Ile Arg Asp
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Cys Leu Pro Glu Leu Lys Thr Arg Ile Asn Val Leu Ala Ala Gln Tyr
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Gln Ser Leu Leu Asn Ser Tyr Gly Glu Pro Val Asp Asp Lys Ser Ala
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Ser Val Asp Pro Leu Gly Gly Leu Asn Thr Ile Asp Ile Leu Thr Ala
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Gln His Cys Ser Asn Tyr Ser Thr Gln Glu Leu Leu Arg Phe Pro Lys
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Ala Tyr Ile Asn Thr Lys His Pro Asp Phe Ala Asp Ala Cys Gly Leu
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Leu Pro Ser Ala Val Ser Arg Asp Lys Leu Ile Gln Asp Ser Arg Arg
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Glu Thr Lys Asn Val Ala Ser Gly Gly Gly Gly Val Gly Asp Gly Val
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Ala Glu Glu Leu Leu Ala Glu Glu Lys Ser Lys Pro Ile Pro Ile Met
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Pro Ala Ser Pro Gln Lys Gly His Ala Val Asn Leu Leu Asp Val Pro
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Val Pro Val Ala Arg Lys Leu Ser Ala Arg Glu Gln Arg Asp Cys Glu
660 665 670

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Ile Gln Asp Ser Val Pro Lys Ala Val Met His Phe Leu Val Asn His
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Asn Gly Cys Arg Leu Pro Arg Arg Gly Arg Arg Gly Gly Arg Arg
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Arg Thr Val Gly Pro Gly Pro Ile His Cys Arg Gly Arg Arg Ala Leu
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Gly Pro Arg Val Phe Arg Val Met Glu Ala Leu Ile Pro Val Ile Asn
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Lys Leu Gln Asp Val Phe Asn Thr Val Gly Ala Asp Ile Ile Gln Leu
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Leu Glu Ser Leu Val Gly Arg Asp Leu Leu Pro Arg Gly Thr Gly Ile
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Val Thr Arg Arg Pro Leu Ile Leu Gln Leu Val His Val Thr Gln Glu
115 120 125
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Asp Lys Arg Lys Thr Thr Gly Glu Glu Asn Gly Val Glu Ala Glu Glu
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Trp Gly Lys Phe Leu His Thr Lys Asn Lys Leu Tyr Thr Asp Phe Asp

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Lys Arg Leu Pro Val Thr Asn Glu Met Val His Asn Leu Val Ala Ile	
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 Met His Phe Leu Val Asn His Val Lys Asp Thr Leu Gln Ser Glu Leu
 690 695 700

gta ggc cag ctg tat aaa tca tcc tta ttg gat gat ctt ctg aca gaa 2161
 Val Gly Gln Leu Tyr Lys Ser Ser Leu Leu Asp Asp Leu Leu Thr Glu
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 Ser Glu Asp Met Ala Gln Arg Arg Lys Glu Ala Ala Asp Met Leu Lys
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Arg Val Phe Arg Val Met Glu Ala Leu Ile Pro Val Ile Asn Lys Leu	50	55	60
Gln Asp Val Phe Asn Thr Val Gly Ala Asp Ile Ile Gln Leu Pro Gln	65	70	75
Ile Val Val Val Gly Thr Gln Ser Ser Gly Lys Ser Ser Val Leu Glu	85	90	95
Ser Leu Val Gly Arg Asp Leu Leu Pro Arg Gly Thr Gly Ile Val Thr	100	105	110
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Arg Lys Thr Thr Gly Glu Glu Asn Gly Val Glu Ala Glu Glu Trp Gly	130	135	140
Lys Phe Leu His Thr Lys Asn Lys Leu Tyr Thr Asp Phe Asp Glu Ile	145	150	155
Arg Gln Glu Ile Glu Asn Glu Thr Glu Arg Ile Ser Gly Asn Asn Lys	165	170	175
Gly Val Ser Pro Glu Pro Ile His Leu Lys Ile Phe Ser Pro Asn Val	180	185	190
Val Asn Leu Thr Leu Val Asp Leu Pro Gly Met Thr Lys Val Pro Val	195	200	205
Gly Asp Gln Pro Lys Asp Ile Glu Leu Gln Ile Arg Glu Leu Ile Leu	210	215	220
Arg Phe Ile Ser Asn Pro Asn Ser Ile Ile Leu Ala Val Thr Ala Ala	225	230	235
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Phe Leu Gln Lys Lys Tyr Pro Ser Leu Ala Asn Arg Asn Gly Thr Lys
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Cys Leu Pro Glu Leu Lys Thr Arg Ile Asn Val Leu Ala Ala Gln Tyr
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Gln Ser Leu Leu Asn Ser Tyr Gly Glu Pro Val Asp Asp Lys Ser Ala
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675 680 685

Phe Leu Val Asn His Val Lys Asp Thr Leu Gln Ser Glu Leu Val Gly
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Ser Tyr Asn Lys Leu Asn Ser Lys Ser Pro Glu Ser Asp Asn His Asp	
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Pro Gly Gln Leu Asp Asn Ser Lys Pro Ser Lys Thr Glu His Gln Lys	
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Gln Asn Asn Thr Pro Ser Asp Arg Phe Val Ile Glu Val Asp Thr Ile	
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Lys Arg Asp Ser Tyr Glu Lys Leu Lys Asp Leu Ile His Cys Trp Ala	
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775 780 785 790	
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Cys Met Arg Ser Arg Asn Pro Asp Glu Ser Ala Lys Leu Ala Asp Ser	
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